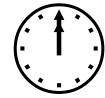Name _____

Sign the pledge:

No Aid; No Violations _____

Mike Lovell

9:00-12:00, December 16, 1999

Room SC 121

Econ 105: Final Examination

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Please Note:

- The exam will end at 12:00 noon! Budget your time carefully
- Save time to read over your answers and make corrections at the end of the test.
- Start your answers in the space provided, but continue if necessary on the back of the page or on a separate sheet of paper. Extra sheets are available in the front of the room.
- Show your calculations in order that you may receive partial credit even if you make a numerical error.
- If you would like me to mail your exam to your home, leave a stamped addressed envelope in the slot for this course in the Economics/Sociology Alcove. Otherwise, your work will be returned to the alphabetical slots in the Alcove to be picked up at the start of classes for the second semester.
- If you want additional feedback on any aspect of your work, please contact me at your convenience for an appointment.

Exam Protocol:

- Sign the Pledge; observe the Honor Code. Ask the instructor if you have any questions
- Spread Out! Please avoid sitting close to anyone
- Step out of the room when you please, but when you leave place your exam on the front table.
- When you have finished the exam, check it over carefully. Then place your examination in the envelope on the table in the front of the room and leave quietly.

Part I: [60points]

1. How much corn will be demanded if the price is $8 and income is $32?
a. What is the price elasticity of demand for corn? Explain.

b. In 1999 farmers sold 4,000,000 bushels of apples at $4.00 per bushel. In 1998 they sold only 3,000,000 bushels at a price of $6.00. Calculate the (arc) price elasticity of demand.

2. The demand function for wheat is $q_d = 400 - 100p$. The supply function is $q_s = 100\ p$.
    a. What is the equilibrium price of wheat? What quantity will be sold?
    b. If the government requires produces to pay a tax of $1.00 on each unit that they sell, what price will the consumers have to pay for each item that they purchase.
    c. How much consumer surplus will be lost as a result of the tax?

3. Mary is a utility maximizer who consumer goods X_1 and X_2 at prices $p_1 = \$1$ and $p_2 = \$2$. Her utility function is $U = 2X_1^{0.5} + X_2$.
   a. Determine Mary's demand function showing the quantity of X_1 she purchases as a function of price p_1 and p_2 and income Y.
   b. If $p_1 = \$1$, $p_2 = \$2$ and $Y = \$10$, how much X_1 and X_2 will she purchase? How much utility will she enjoy?
   c. If the price of X_1 increases to $p_1 = \$2$, but p_2 and income remain unchanged, how much X_1 and X_2 will Mary purchase? How much utility will she enjoy?
   d. How much would Mary's income have to increase by in order to enable her to enjoy the same level of utility after the increase in p_1 as she enjoyed before the inflation?

5. Max started his own software business in January of 1999. He purchased $2,000 worth of equipment. His supplies cost $5,000. His labor costs were zero. But because he worked 12 hour days he managed to sell $10,000 worth of software his first year.
   a. Now it is April of year 2000, and he hires an accountant to figure out his income tax return. How much profit will the accountant say he make in his business in 1999?
   b. How much *economic* profit did Max make?
   c. What are the major factors distinguishing accounting from economic profit?

6. Albert's company has total cost function $C(q) = 100 + 10q^2$.
   a. Fixed costs are:
   b. Average total cost function is.
   c. Marginal cost function is:
   d. At output level _____ average costs are minimized; minimum average total cost is $
   e. The break-even price is:
   f. The shut-down price is:
   g. If Albert's firm markets its output in a competitive industry with free entry and exit, what will be the equilibrium price?
   h. How much will be sold by all the firms in the industry if the industry demand curve is $q(p) = 1000 - p$?

7. A monopolist facing the demand function $p(q) = 30 - 3q$ has total cost function $C(q) = 100 + 10q$.
   a. How much should the monopolist sell to maximize profit? What price will maximize profits for the monopolist?
   b. What price and quantity should be produced in order to maximize the sum of profit plus consumer surplus. How much consumer surplus will be enjoyed?
   c. If the manufacturing process generates pollution that costs $2.00 per unit of output, how are your answers to question a affected. How does it change your answer to b, assuming the objective is to maximize the sum of profits plus consumer surplus less pollution costs?

8. A pharmaceutical firm's $1 billion investment pays off. It has developed a wonderful new drug. It will cost $100 to produce and distribute an annual dose, over and above the development costs. That is to say, the total cost function is $C(q) = \$1 \text{ billion} + \$100q$, where q is the number of patients receiving the treatment. The marketing department estimates that a price of $250 will maximize profits from the drug with annual sales of 100,000. Assuming that the demand curve for the product is linear, what price would maximize the sum of consumer surplus plus profit? How many patients would buy the medicine at this price?

9. In December, 1982, the Civilian Labor Force was 110,962 and employment was 99,055. What was the level of unemployment and the unemployment rate?

10. The seasonally unadjusted unemployment rate increased from 9.1% in May to 9.8% in June but the seasonally adjusted rate remained unchanged at 9.5%. What accounts for the discrepancy between the seasonally unadjusted and the seasonally adjusted rate?

11. In year 2010, your salary is $100,000 and the price index (2000=100) stands at 150. In year 2011, your salary is $110,000 but the price index stands at 160. Are you better off, economically speaking, in year 2010 or in year 2010? Explain.

12. In year 2010, you take out a 30-year mortgage at 6% annual interest on a $300,000 house. If it turns out that prices rise at 4% per annum over the life of the mortgage, what real rate of interest that you will pay on the mortgage? Would you expect your house to be worth more or less than $600,000 in year 2050? Why?

13. If the unemployment rate were to increase from 4% to 6%, would you expect GDP to decline by about 2%? Why or why not.

14. In 1998 GDP was equal to about $ billion but disposable income was only $ billion. What are the major factors accounting for the $ billion gap between GDP and disposable income? Explain.

15. In Simpleland, $Y = C + I + G + X - M$, $C = 2/3 Y_d$, and $Y_d = \frac{3}{4} Y$. Suppose that I = $80 billion, X = $30 billion , and M = $10 billion. Determine the level of Y, Y_d and C.

16. If humanitarian instincts were to induce the United States to lend $5 billion to earthquake victims in Turkey and Armenia, how would this affect the US economy, assuming that the funds were spent on goods and services from America?

17. IsLand is just like SimpleLand, except that investment is $I = 100 - 200r$. If the rate of interest is 10% = 0.10, what will be the level of Y? If the Fed cuts the interest rate to 5%, by how much will Y change?

18. Suppose the demand function for money in IsLmLand is $M_d = 100 - Y/2 - 2000r$. If the Fed wishes to establish an interest rate of 5% and Y = 1,000, how much money supply will the Fed want the banking system to create? If the reserve requirement is 10%, how much in the way of reserves will be required?

19. Explain what steps the Fed can take to increase the quantity of money in circulation.

20. Suppose inflation has gotten completely out of hand in Never Never Land. Prices are rising at more than 10% per annum! Some distinguished university experts assert that the Fed should aggressively cut the money supply in order to stop the inflation while other scholars proclaim that this would be exactly the wrong thing to do because it would generate unemployment. The

Fed decides to not engage in any open market operations or take other steps to stop the inflation. Are there any natural forces that will tend to bring inflation to an end?

Part 2: (20 points) Write a brief essay explaining the most intriguing and surprising economic aspects of the Economics of World War II (Dec 7, 1941, August 14th, 1995). Your discussion should consider but not be limited to the following questions:

    a.   How big a drain did the war place upon the resources of the economy?

    b.   How much of a sacrifice did consumers make?

    c.   How severe was the inflation? How was the war financed?

    d.   Why and how did the Fed keep interest rates so low.

    e.   Do you think the right economic policies were being followed? What policies (with the aid of hindsight) might have worked better?

    f.   What is the most surprising lesson to be learned about the American economy from World War II?

THE ECONOMICS OF WORLD WAR II

	1939	1941	1944	1945	1946	1947	Growth/annum 1939 to 1945
GDP(real, 1987 dollars)	840.7	1,070.6	1,670.0	1,602.6	1,272.1	1,252.8	11.4%
GDP(nominal)	90.8	125.0	211.0	213.1	211.9	234.3	15.3%
Govt spending (G)	13.5	24.8	96.9	83.3	29.2	26.2	29.7%
Defense Spending	1.3	13.8	87.5	73.7	16.4	10.0	96.0%
Government Transfers	2.5	2.6		5.6	10.8	11.2	14.4%
Government Deficit	-2.2	-3.8		-39.5	5.4	14.4	
G/GDP	14.9%	19.8%	45.9%	39.1%	13.8%	11.2%	
Implicit Price Deflator(1972=100)	10.8%	11.7%		13.3%	16.7%	18.7%	3.5%
Consumer Price Index	41.6	44.1		53.9	58.5	66.9	4.4%
Money Supply							
M1	34.2	46.5		99.2	106.5	111.8	19.5%
M2	49.3	62.5		126.6	138.7	146.0	14.4%
currency'	6.0	8.4		25.3	26.5	26.6	27.0%
Government Debt	42.6	56.3		252.5	229.5	221.7	
Debt/GNP	46.9%	45.0%		118.5%	108.3%	94.6%	
Velocity							
v1 = Y/M1	2.7	2.7		2.1	2.0	2.1	
v2 = Y/M2	1.8	2.0		1.7	1.5	1.6	
Interest Rates (%)							
T-bills	0.023%	0.014%		0.375%	0.375%	0.375%	
3 to 5 year issues	0.59%	0.50%		1.18%	1.16%	1.32%	
Unemployment Rate (%)	17.2	9.9	1.2	1.9	3.9	3.9	

Honors Option: (Do not attempt to answer this question until you have checked over your answers to the standard questions - credit will not be given for a partial answer to the Honors Option.)

A profit maximizing firm has production function $Q = L^{2/3}K^{1/4}$. Determine the long run total cost function for this firm if it pays a daily wage rate of $200 for labor and rents machines for $1.00 per day. Then determine its long run supply curve if it sells its output on a competitive market.